



Operational Energy Assumptions, Analysis and Methods - Work to Date

Mr. David Bak

**Contractor Support to the
Office of the Director, Operational Energy Plans and Programs
Office of the Secretary of Defense**

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE JUN 2010		2. REPORT TYPE		3. DATES COVERED 00-00-2010 to 00-00-2010	
4. TITLE AND SUBTITLE Operational Energy Assumptions, Analysis and Methods -Work to Date				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Office of the Secretary of Defense,Office of the Director, Operational Energy Plans and Programs,3700 Defense Pentagon ,Washington,DC,20301-3700				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES Presented at the NDIA Environment, Energy Security & Sustainability (E2S2) Symposium & Exhibition held 14-17 June 2010 in Denver, CO.					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 11	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			



DoD's Energy Challenges

- **Growing operational energy demand**

- In-development systems demand more & rapid equipping isn't the whole fix

- **Increasing footprint**

- US logistics requirements increasing
- Planning has over-assumed fuel availability for ops

- **Underappreciated risk**

- Anti-access threats increasing, in insurgencies and hi-end ops
- Cost growth in fuel, logistics, personnel, etc.
- Tooth-to-tail imbalance in larger force structure – contractors in Phase I & II?
- Bigger log "tail" reduces unit flexibility, mobility – grows force protection needs



Energy not currently managed in line with emerging risks



Considerations for Energy Strategy & Investment

What is DoD's core business?

- Fielding and sustaining a credible deterrent and highly capable joint force
- Assuring global commerce and global commons – our national security is tied to prosperity

How does energy affect DoD's core business?

- Assures global reach and persistence
- Enables high-end capabilities
- Powers mission-critical reach-back and deployment from fixed bases



What are the operational challenges re: Energy?

- US forces energy demand is increasing while opponents capabilities to deny it are also increasing - systemic
- Technology innovations needed and will help but isn't a panacea – other innovation also needed
- Cost of energy going up, hitting O&S accounts – add logistics and force protection and expense increases by order of magnitude

Is this a game-changing issue or not? What's the magnitude? How should energy play in the tradespace vs. lethality, stealth, ISR access, etc?

- Operationally, financially, culturally, technologically, etc.

Does growth of reach-back support change the nature of installation energy?



Considerations for DoD Ops. Energy Strategy & Investment

- **What processes and levers do we have to influence?**
 - Force Planning Assumptions & Defense Planning Scenarios
 - Be more realistic about the threats to US “tail” and potential impacts on operational plans, force availability and platform capability expectations
 - Modify planning models to include logistics demands, RED threats, etc.
 - Requirements Development (JCIDS)
 - Treat energy demand as a constraint to be managed versus supply as an assumption
 - Implement Energy KPP – consider making it mandatory
 - Inform acquisition & tech community on increasing *value* of energy innovation
 - Acquisition Programs & Rapid Fielding
 - Include the Fully Burdened Cost of Fuel in tradespace decisions, not just commodity price
 - Rapid Equipping solutions can help – flexibility and war-fighter buy-in required
 - Technology Priorities and Investment
 - Raise priority, experimentation & investment in efficiency, lighter weight, local supplies, density
 - Culture, Measurement, Education and Billing
 - Culture towards energy will change when (positive and negative) incentives change
 - Relook how energy is addressed in PME – logistics in the operational art, resource mgmt, etc.



JCIDS & Acq. Oversight - Fuel Demand in Future Force Increasing

- **Policy/Analytic organizations need to ask harder questions & start analysis to better inform requirements deliberations, acquisition tradespace and doctrinal decisions – example:**
 - GCV & JLTV – Fuel demand *increasing* over baselines
 - Growing FP requirements – some FP be self-defeating
 - Growing electrical load requirements
 - Focus on per-unit cost skewing consideration of some tech options
 - NGB – Air Force energy approach pre-cancelation was sound
- **Policy/CAPE/AT&L needs to ask Services harder questions on how they plan to reconcile growing energy demand, log tail and total ownership cost risk in their acquisition plans**



Some Work Is Underway

- **Mainstreaming Energy consideration in major DoD planning & business processes**
 - Service Title 10 wargames – Just starting to ensure the “tail” is under realistic threat
 - Working with Services to revisit assumptions in key campaign models
 - Helping bring strategic planning and DoD process insight to DoD Energy “Community” – refocus on “Operational” ROI as well as costs, carbon, etc.
- **Developing Energy KPP methodology and application framework**
 - Cooperating with J4 to develop methodology – proof of concept study
 - Similar study underway with Navy Energy Office, but includes FBCF too
- **Developing Fully Burdened Cost of Fuel methodology & usage rules**
 - FBCF guidance language developed w/ PA&E (CAIG) for system AoAs
 - Coordinating w/ Services on applying FBCF to programs in development (ex. GCV & JLTV)

First major studies reporting in final security review now



SecDef on 8 May 2010



...The goal is to cut our overhead costs and to transfer those savings to force structure and modernization within the programmed budget. **In other words, to convert sufficient “tail” to “tooth” to provide the equivalent of the roughly two to three percent real growth – resources needed to sustain our combat power at a time of war and make investments to prepare for an uncertain future.** Simply taking a few percent off the top of everything on a one-time basis will not do. **These savings must stem from root-and-branch changes that can be sustained and added to over time.**

What is required going forward is not more study. Nor do we need more legislation. It is not a great mystery what needs to change. **What it takes is the political will and willingness, as Eisenhower possessed, to make hard choices – choices that will displease powerful people both inside the Pentagon and out.**

Logistic Tail is Overhead – Actively Work to Reduce Energy Demand



2009 NDAA DOEPP Language

SEC. 902. DIRECTOR OF OPERATIONAL ENERGY PLANS AND PROGRAMS.

(a) ESTABLISHMENT OF POSITION; DUTIES.—Chapter 4 of title 10, United States Code, is amended by inserting after section 139a the following new section:

§ 139b. Director of Operational Energy Plans and Programs

(b) DUTIES.—The Director shall—

- (1)** provide leadership and facilitate communication regarding, and conduct oversight to manage and be accountable for, operational energy plans and programs within the Department of Defense and the Army, Navy, Air Force, and Marine Corps;
- (2)** establish the operational energy strategy;
- (3)** coordinate and oversee planning and program activities of the Department of Defense and the Army, Navy, Air Force, and the Marine Corps related to—
 - (A)** implementation of the operational energy strategy;
 - (B)** the consideration of operational energy demands in defense planning, requirements, and acquisition processes; and operational energy demand and supply technologies; and
- (4)** monitor and review all operational energy initiatives in the Department of Defense.

(c) PRINCIPAL ADVISOR FOR OPERATIONAL ENERGY PLANS AND PROGRAMS.—

- (1)** The Director is the principal adviser to the Secretary of Defense and the Deputy Secretary of Defense regarding operational energy plans and programs and the principal policy official within the senior management of the Department of Defense regarding operational energy plans and programs.
- (2)** The Director may communicate views on matters related to operational energy plans and programs and the operational energy strategy required by subsection (d) directly to the Secretary of Defense and the Deputy Secretary of Defense without obtaining the approval or concurrence of any other official within the Department of Defense.



Related 2009 NDAA Energy Language


SEC. 332. CONSIDERATION OF FUEL LOGISTICS SUPPORT REQUIREMENTS IN PLANNING, REQUIREMENTS DEVELOPMENT, AND ACQUISITION PROCESSES.

- (a) PLANNING.**—In the case of analyses and force planning processes that are used to establish capability requirements and inform acquisition decisions, the Secretary of Defense shall require that analyses and force planning processes consider the requirements for, and vulnerability of, fuel logistics.
- (b) CAPABILITY REQUIREMENTS DEVELOPMENT PROCESS.**—The Secretary of Defense shall develop and implement a methodology to enable the implementation of a fuel efficiency key performance parameter in the requirements development process for the modification of existing or development of new fuel consuming systems.
- (c) ACQUISITION PROCESS.**—The Secretary of Defense shall require that the life-cycle cost analysis for new capabilities include the fully burdened cost of fuel during analysis of alternatives and evaluation of alternatives and acquisition program design trades.
- (d) IMPLEMENTATION PLAN.**—The Secretary of Defense shall prepare a plan for implementing the requirements of this section. The plan shall be completed not later than 180 days after the date of the enactment of this Act and provide for the implementation of the requirements by not later than three years after the date of the enactment of this Act.
- (e) PROGRESS REPORT.**—Not later than two years after the date of the enactment of this Act, the Secretary of Defense shall submit to the congressional defense committees a report describing progress made to implement the requirements of this section, including an assessment of whether the implementation plan required by section (d) is being carried out on schedule.
- (f) NOTIFICATION OF COMPLIANCE.**—As soon as practicable during the three-year period beginning on the date of the enactment of this Act, the Secretary of Defense shall notify the congressional defense committees that the Secretary has complied with the requirements of this section. If the Secretary is unable to provide the notification, the Secretary shall submit to the congressional defense committees at the end of the three-year period a report containing— (1) an explanation of the reasons why the requirements, or portions of the requirements, have not been implemented; and (2) a revised plan under subsection (d) to complete implementation or a rationale regarding why portions of the requirements cannot or should not be implemented.
- (g) FULLY BURDENED COST OF FUEL DEFINED.**—In this section, the term “fully burdened cost of fuel” means the commodity price for fuel plus the total cost of all personnel and assets required to move and, when necessary, protect the fuel from the point at which the fuel is received from the commercial supplier to the point of use.



DoD Operational Energy Policy

DODI 5000.02, 2 Dec 08

 Department of Defense
INSTRUCTION

NUMBER 5000.02
December 2, 2008
USD(AT&L)

SUBJECT: Operation of the Defense Acquisition System

References: See Enclosure 1

1. **PURPOSE.** This Instruction:

- Reissues Reference (a) to implement DoD Directive 5000.01 (Reference (b)), the guidelines of Office of Management and Budget (OMB) Circular A-11 (Reference (c)), and the various laws, policy, and regulations listed in Enclosure 1 of this issuance.
- Establishes a simplified and flexible management framework for translating capability needs and technology opportunities, based on approved capability needs, into stable, affordable, and well-managed acquisition programs that include weapon systems, service, and automated information systems (AISs).
- Consistent with statutory requirements and Reference (b), authorizes Milestone Decision Authorities (MDAs) to tailor the regulatory information requirements and acquisition process procedures in this Instruction to achieve cost, schedule, and performance goals.

2. **APPLICABILITY AND SCOPE.** This Instruction applies to:

- OSD, the Military Departments, the Office of the Chairman of the Joint Chiefs of Staff and the Joint Staff, the Combatant Commands, the Office of the Inspector General of the Department of Defense, the Defense Agencies, the DoD Field Activities, and all other organizational entities within the Department of Defense (hereafter referred to collectively as the "DoD Components").
- All defense technology projects and acquisition programs, including acquisitions of services. Some requirements, where stated, apply only to Major Defense Acquisition Programs (MDAPs) or Major Automated Information System (MAIS) programs.
- Highly sensitive classified, cryptologic, and intelligence projects and programs shall follow this Instruction and Reference (b) to the extent practicable.

Enclosure 7, Resource Estimation (AoAs)

"6. ENERGY CONSIDERATIONS. The fully burdened cost of delivered energy shall be used in trade-off analyses conducted for all DoD tactical systems with end items that create a demand for energy."

- 2009 NDAA and 2010 QDR mandate FBCF & KPP
- DoDI 5000.02 requires use of FBCF in AoA analysis
- CJCSI 3170.01G updates KPP language
- Defense Acquisition Guidebook supports FBCF



Considerations for DoD Energy Strategy & Investment

- **What's DoD's appropriate role in US national energy agenda?**
 - Show DoD embracing energy innovations & investments as smart investments
 - Talk up technology innovations for military needs but with civil spin-offs
 - Be a test bed for commercial and DoE lab technologies and products
 - Show DOD's commitment to sustainability & climate change mitigation
 - Bring strategy and campaign development skills to interagency energy effort

Bottom Line:

- 1. Focus DoD efforts on energy innovations that improve capability of the force – spin-offs will happen anyway***
 - *We invented microcomputers and carbon fiber to beat Soviets, not to create a market*
- 2. It's worth more for DoD to save a gallon of fuel than any other entity on the planet, so invest accordingly***
 - *WalMart's doesn't own flying gas stations that can get shot at – we do*